Anelastic Strain Recovery of Amorphous Metals

minutes, a remarkably large coupling factor k was found in the bias field 5 Oe to be 0.53, which was almost the same as the value of the high magnetostrictive rare earth-Fe_2. The ΔE effect increased with the increase of the bias field, took a gigantic value 0.8 at about 5 Oe and then decreased monotonically with the increase of the bias field. The ΔE effect is known to correspond to a change in sound velocity, so that the change of the sound velocity was also observed as a function of the frequency from 100 kHz to 1MHz in a delay line using the ribbons.

Zero Magnetostriction and Extremely Low Residual Magnetic Loss in Fe-Co Amorphous Ribbons

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IEEE Transactions on Magnetics, MAG–**12** (1976), 939.

The initial permeability μ_i, the loss factor tan δ, and the inverse quality factor tan δ/μ_i of $Fe_5Co_{70}Si_{15}B_{10}$ ribbons 35 μm, 30 μm, 25 μm and 21 μm in thickness were measured with a Maxwell Bridge from room temperature to 140°C in the high-frequency region from 3 kHz to 500 kHz. The initial permeability of the ribbon 21 μm in thickness was about 10,600 at 3 kHz and 4300 at 500 kHz. The residual loss coefficient C_1 and the hysteresis loss coefficient h_1 were extremely low, about 8×10^{-3} and 60 (cm/A), respectively. In the high-frequency region, the eddy current loss term increases with the square of the thickness of the ribbons and plays the most important part of all the magnetic losses.

Deformation of Amorphous Metals

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Mater. Sci. Eng., **25** (1976), 71.

Some problems to be clarified in the research field concerned with the deformation of amorphous metals have been discussed under experimental evidences obtained so far. The contents consist of 1) elastic and anelastic deformation, 2) temperature and strain rate effects on plastic deformation (mode of deformation, inhomogeneous deformation and homogeneous deformation), and other important effects on plastic deformation (structural effect, compositional effect, environmental effects).

Anelastic Strain Recovery of Amorphous Metals

Takeo MURATA, Hisamichi KIMURA and Tsuyoshi MASUMOTO

Scripta Met., **10** (1976), 705.

Amorphous $Pd_{80}Si_{20}$, $Fe_{80}P_{13}C_7$ and $Cu_{60}Zr_{40}$ alloys have been prepared by a rapid cooling of melts using the centrifugal and roller type quenching apparatuses. The creep strain and the strain of the anelastic recovery have been measured as functions of the temperature and applied stress. Creep deformation can be approximated by the model which consists of the Maxwell and Voigt elements connected in series, and is considered to be of visco-elastic origin.